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REMARKS

Claims 1-20 are pending in the present application.

Claims 1-20 have been rejected.

Paragraph 20 of the Office Action dated August 28, 2002 indicates that claim 8 contains allowable subject matter and would be allowed if amended to overcome a '112 rejection and rewritten in independent form. Replacement claim 8 is believed to be allowable.

Paragraph 16 of the Office Action indicates that claims 1, and 5-7 are rejected under 35 U.S.C. 102 (b) as being anticipated by Efremow et al. Paragraph 18 of the Office Action indicates that claims 2-4, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Efremow et al. as applied in paragraph 16.

Replacement claim 1 recites the subject matter of claim 2, now cancelled. Thus the '102 rejections with respect to claims 1, and 5-7 have been rendered moot.

The '103 rejections are respectfully traversed. Replacement claim 1 recites a method of forming features in a carbon-based work piece. A mask layer is deposited on the work piece, and a pattern is created in the mask by photolithography. The pattern is then etched into the work piece.

Applicant has clearly taken advantage of attributes of photolithography and devised a method of utilizing the process to create desirable patterns in a carbon-based work piece that is otherwise difficult to fabricate.

Efremow et al. do not teach or suggest the use of photolithography in creating a pattern, much less a pattern formed in a **carbon-based** work piece. Therefore,

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The examiner acknowledges that Efremow et al. do not teach or suggest using photolithography to form features in a carbon-based work piece. However, the examiner states that the use of photolithography is a known technique in the semiconductor processing arts; and opines that it would be "obvious" to use photolithography to process a carbon-based work piece because photolithography is "an alternative, and at least equivalent means" to ion etching of diamond.

The examiner provides no factual basis for his opinion. There is no teaching or suggestion in Efremow et al nor is there any teaching in any of the other cited documents that photolithography can be used to create patterns in diamond or other carbon-based work pieces.

There are numerous patents describing manufacture of carbon-based work pieces. Yet the examiner has not cited one that teaches or suggests the use of photolithography to form features in carbon-based work pieces. All the examiner does is state his opinion.

Since the examiner has not provided a factual basis for his opinion, it is presumed that he is relying on his personal knowledge. The examiner is respectfully requested, pursuant to MPEP 707 and 37 CFR 1.104(d)(2), to cite a document or affidavit supporting his personal knowledge that photolithography is "an alternative, and at least equivalent means" to ion etching of diamond. If the examiner does not provide an affidavit or cite a document supporting his opinion, he should allow claim 1 over the documents made of record.

Replacement claim 3 has been amended to depend from replacement claim 1. Replacement claims 5 and 6 are believed to overcome 112 rejections made in paragraph 19 of the office action. Claims 3-7 and 9, which depend from claim 1, would also be allowed for the reasons above.

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clarifies that the work piece is made of a carbon-carbon material, which is a type of carbon-based material. Carbon-carbon material is well known to those skilled in the art.

Claims 10-19 have not been rejected on any other grounds. Therefore, replacement claim 10 and its dependent claims 11-19 should be allowed over the documents made of record.

Paragraph 16 of the Office Action also indicates that claim 20 is rejected under 35 U.S.C. 102 (b) as being anticipated by Efremow et al. This rejection has been rendered moot by replacement claim 20, which recites a work piece containing carbon-carbon, and a mask layer on the work piece. The mask layer has an etched pattern extending through to the carbon-carbon containing work piece.

Efremow et al. describe a process of etching into a diamond substrate, not a carbon-carbon work piece. Clearly, diamond is not carbon-carbon.

None of the other cited documents teach or suggest a mask having an etched pattern on a work piece containing carbon-carbon. Therefore, replacement claim 20 should be allowed.

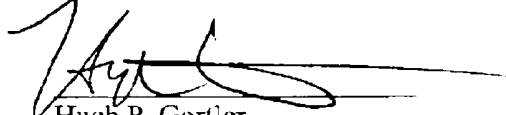
An added claims fee has been incurred because the number of independent claims has been increased from three to four. The transmittal letter provides authorization to charge the added claims fee to the assignee's deposit account.

A petition for a ONE month extension of time is attached. The petition extends the period of response until December 28, 2002. The petition provides authorization to charge the added claims fee to the assignee's deposit account.

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It is respectfully submitted that the present application is in condition for allowance. Reconsideration and allowance of the present application are earnestly solicited. The examiner is invited to contact the undersigned to discuss any issues that remain in the application.

Respectfully submitted,



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I hereby certify that this correspondence is  
being facsimile transmitted to the  
United States Patent and Trademark Office  
on December 9, 2002.

  
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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

1. A method of forming features in a carbon-based work piece, the method comprising:

depositing a mask layer on the work piece;  
creating a pattern in the mask layer by photolithography; and  
etching the pattern into the work piece to a ~~predetermined depth~~.

3. The method of claim 21, wherein the photolithography includes depositing a photoresist layer on the masked work piece and exposing the photoresist to ultra-violet light.

5. The method of claim 1, wherein the etching step comprises plasma etching the pattern into the work piece to a ~~predetermined depth~~ ~~form the complex shape~~.

6. The method of claim 1, wherein the etching step comprises reactive ion etching the desired pattern into the work piece to a ~~predetermined depth~~.

8. A The method of claim 1, of forming features in a carbon-based work piece, the method comprising;

depositing a mask layer on the work piece;  
creating a pattern in the mask layer;  
etching the pattern into the work piece; and

further comprising ~~chemically dissolving~~ removing that portion of the mask layer remaining after the etching.

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10 A method of forming details in a ~~Carbon-Carbon~~ work piece made of Carbon-Carbon material, the method comprising:

depositing a mask layer on at least a portion of the work piece;  
creating the desired pattern in the mask layer;  
removing that portion of the mask layer forming the desired pattern; and  
etching the desired pattern to form the complex shape in the work piece.

20. An article comprising:

a ~~carbon-carbon~~ containing work piece; and  
a mask layer on the work piece;  
the mask layer having an etched pattern extending through to the ~~carbon-carbon~~ containing work piece.